Time Allocation of Fisher-Farmer Households in Phlong Village, in Fishing Lot #14, Kampong Chhnang Province

by

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ABSTRACT

Fishing and farming are the most important economic activities of rural people in Cambodia: more than 80% of the population who live in the countryside rely extensively on these two activities.

It is often believed that, in economic terms, rice cultivation is the most important rural activity, but this depends to a large degree on physiographic conditions: proximity to rivers, streams, and lakes or exposure to annual flooding and, particularly, soil quality.

Traditionally, many people reside in villages close to or inside fishing lots, the most productive freshwater fishing grounds in Cambodia, exploited under a regime of private concessions, however proximity to fishing lots has also been the reason why many of the communities located inside or adjacent to the lots have faced problems of access to surrounding fishing grounds.

As most of these villages are regularly inundated, it is assumed that dependency is higher on fishery than on rice farming. However, little is known about time allocation patterns for fishing and farming activities in these communities.

A long-term case study of economic and social activities was conducted for a 1-year period during 1999–2000 in Phlong village, Kompong Chhnang province. A stratified sample of 21 households was chosen randomly in order to monitor their activities on a daily basis using a simple questionnaire. The preliminary analysis described in this paper is based on data from the first nine months of the survey, from December 1999 – August 2000 inclusive. Activities were monitored during the day, from 5 am – 7 pm.

The main objective of the study was to measure and compare the fisheries and farming cultivation activities of a community living inside a fishing lot. Specifically, the study aimed to compare the time allocated to different social and economic activities by the inhabitants of Phlong village, inside fishing lot #14, Kampong Chhnang province. The question of time allocation for social activities and leisure is considered to be of major importance in relation to how and when to reach the villagers through extension work.

A comparison between the different activities showed that the 'domestic activities' category (which includes housework, eating and resting) occupied most of the hours monitored daily (49%) compared to fishing (13.5%), farming (18%) and collection of common property resources (CPRs) (4.7%).

Fishing and farming activities were distributed unevenly as fishing takes place throughout the year whereas farming activities are concentrated on fewer months. During the farming season, farming activities predominated as farmers had to spend a great deal of time preparing the land and cultivating their crops.

A rough estimate of the average household output from fishing and farming activities during the first nine months of the study were: fish – 383 kg (of which 228 kg were sold); rice – 307 kg; cucumber – 60 kg; beans – 40 kg; and lotus seeds – 42 kg.

During the nine months of the study the roughly estimated value per household of the total fish catch was 800,000 Riel or US$ 205, whereas the value of the output from farming activities was expected to amount to 226,000 Riel or US$ 58 only.

In the present paper some preliminary results from the analysis of time allocation for fishing, farming, CPR gathering and social activities in Phlong village are presented.

1. INTRODUCTION

1.1 Background

1.1.1 Phlong Village

Phlong is one of four villages located inside fishing lot #14, about 15 km southeast of Kampong Chhnang province. The total number of villagers in Phlong is 677, in 136 families. Almost every year the village is completely flooded for 3-4 months. Fishing and farming are the main sources of income of most villagers, but there are 31 families who make a living only by fishing because they do not have access to farmland. All the villagers fish for subsistence only ('subsistence' is here defined as not only for household consumption but also for sale in order to fulfill basic needs). In addition to fishing, the villagers are engaged in other daily activities such as farming, household work, CPR gathering and various social activities.

1.1.2 Laws for family fishing

According to the fisheries law, family fishing can be practiced throughout the year and everywhere except inside fishing lot areas during the open season and in fish sanctuaries. The fishing calendar is divided into two seasons, open (October–May) and closed (June–September). Medium-scale and large-scale fishing operations may operate only in the open season (PRK/1987:9-10, Art. 11). The fishery law restricts the size of family fishing gear: for example, gill nets longer than 10 m are not allowed. However fish stocks and catches are declining, leading to the use of fishing gear that exceeds the legal size limitation.

1.1.3 Food security

The Royal Government of Cambodia has declared its intention to develop the country by focusing on the agricultural sector because the country is richly endowed with natural resources and many crops grow well when conditions are good. Fish and other aquatic products contribute greatly to Cambodia's food security. At present, rice cultivation occupies 90% of the cropped area (1.844 million ha) and supplies 75% of the total calories consumed (Ahmed *et al*., 1998), however for large numbers of rural Cambodians fish is the most important source of protein, as approximately 80% of their protein requirement is derived from fish or fish products (Van Zalinge *et al*., 1998).

1.1.4 Increasing pressure on fisheries

The population of Cambodia rose from 6.2 million in 1970 to 11.4 million in 1998 (Ministry of Planning, 1999), increasing the pressure on natural resources in general and on fish in particular. This has led to an increase in the need for fish products and to an expansion in the area of farmland required for cultivation. Overall, this has had a negative effect on the fisheries: at the same time as fishing efforts increase, inundated forests are being cleared in order to extend farmland, thereby reducing important fish habitats. In addition, illegal fishing activities are practiced by both family fishers and lot owners. Currently, the number of family fishermen and the number of fishing gears are assumed to increase from year to year as new, small-scale fishers are freely able to enter the fishery.

1.1.5 Objective

The objective of this study was to document the family fishing and cultivation activities in Phlong village, located in fishing lot # 14, Kg. Chhnang province. The study aimed, in particular, to:

- Identify the time allocation of the daily activities of fishing-farming households
- Identify the number and type of fishing gears used in family fishing
- Estimate the number and species of fish caught
- Estimate the return from fishing and farming

An important reason for investigating the time allocation was to obtain information on how and when the villagers might be addressed most efficiently by extension work.

2. METHODOLOGY

2.1 Source of data

The primary data collection for the study, “Comparison of time allocation among the different activities of a fishing community in fishing lot: A case study of Phlong village in fishing lot #14, Kg. Chhnang province" was undertaken from December 1999 – December 2000. This preliminary analysis is based on data from the first nine months of the survey, from December 1999 – August 2000 inclusive.

The study was based entirely on survey data from a random stratified sample of 21 households from Phlong village. The survey was designed in order to monitor the villagers’ activities on a daily basis using a simple questionnaire; the period monitored was 5 am – 7 pm. During the study the number of sample households was reduced by two as one of the main informants was killed by a lot guard (while poaching) and one informant moved out of the village (also related to conflicts with the lot owner).

2.2 Data collection

Respondents were provided with forms for reporting their daily activities, such as farming, fishing, and other activities. In order to facilitate the reporting, especially for illiterate informants, the forms used drawings to illustrate the different activities and the informants were taught how to answer the questionnaire. A local assistant was trained to support illiterate households in order to avoid a bias toward the more educated strata. The completed data sheets were collected by project staff in the middle and at the end of each month.

The data collected through the questionnaires covered daily activities (the amount of time spent and units of output from the activity), daily fish catches (method, location, quantity and how much was sold), daily consumption of fish and aquatic animals and how these were obtained, and expenditure on fishing.

Twenty-one different activities were listed on the form and these were divided into five sub-groups of related activities: Fishing, Farming, Gathering of CPRs, Domestic Activities (including household work such as cooking, washing, house-repairing, eating and resting) and Social Activities (including watching television and listening to the radio).

2.3 Data Analysis

Data from the questionnaire were computerized using Microsoft Access software; SPSS software was used for the quantitative analysis. The data collectors were trained in the use of the database. During data entry, two new categories ‘Going out of village’ and ‘Other’, were added for data that fell outside the five main categories.

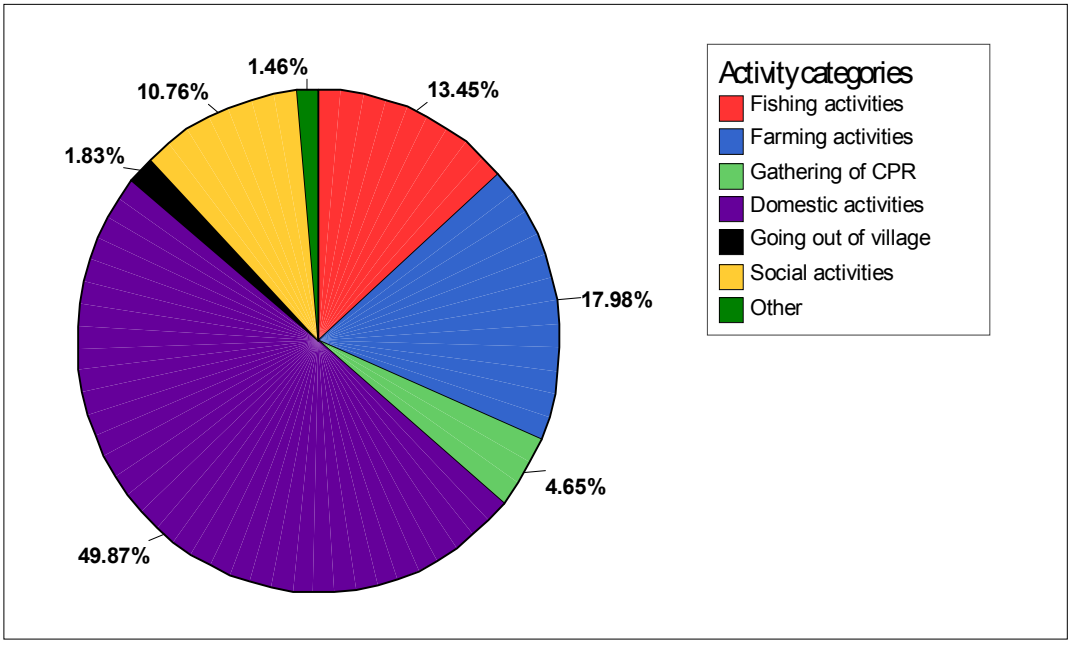
3. RESULTS AND DISCUSSION

3.1 Time allocation of daily activities

After nine months of data collection, the time allocation of the fishing families in the study area was found to be as follows:

Fishing activities occupied 13% of the time, compared to 18% for farming activities. A significant difference, however, is that fishing is an activity that is pursued all year round whereas farming activities are carried out mainly from January to August.

Figure 3.1: Allocation of time on different activities



Most time (50%) was spent on domestic activities. It is important, however, to clarify that this category includes household work such as cooking, washing and house maintenance etc., as well as time spent on eating and resting. Eleven percent of the time was spent on social activities, which included meeting friends, official meetings, religious activities, and watching television/listening to the radio. Meeting friends was the most important social activity (6%), followed by listening to the radio (4%), whereas attending official meetings occupied only 0.1% of the time.

From a gender point of view there were large differences in the amount of time spent on the different activities. Most significant was the distribution of time in fishing, farming and domestic activities: women occupied 71% of their time in domestic activities compared to the 37% that men spent on this activity. Again, it is important to take into account the fact that domestic activities also included eating and resting.

Women were more active in farming activities than in fishing, and the difference between male and female engagement in farming activities was not very significant. Women spent much less time on fisheries activities, however. Time spent gathering CPRs was shared equally between men and women.

Figure 3.2: Allocation of time on activities: women

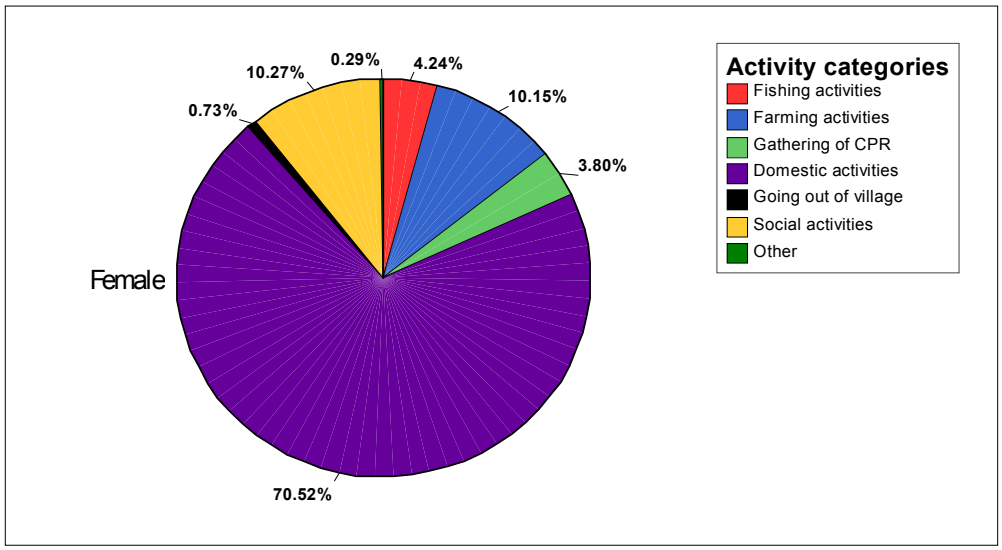
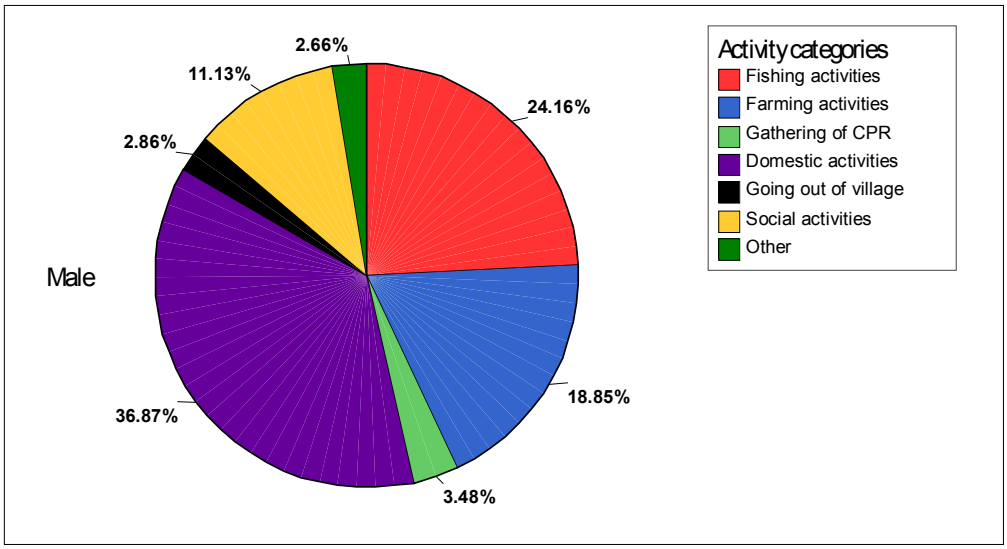


Figure 3.3: Allocation of time on activities: men



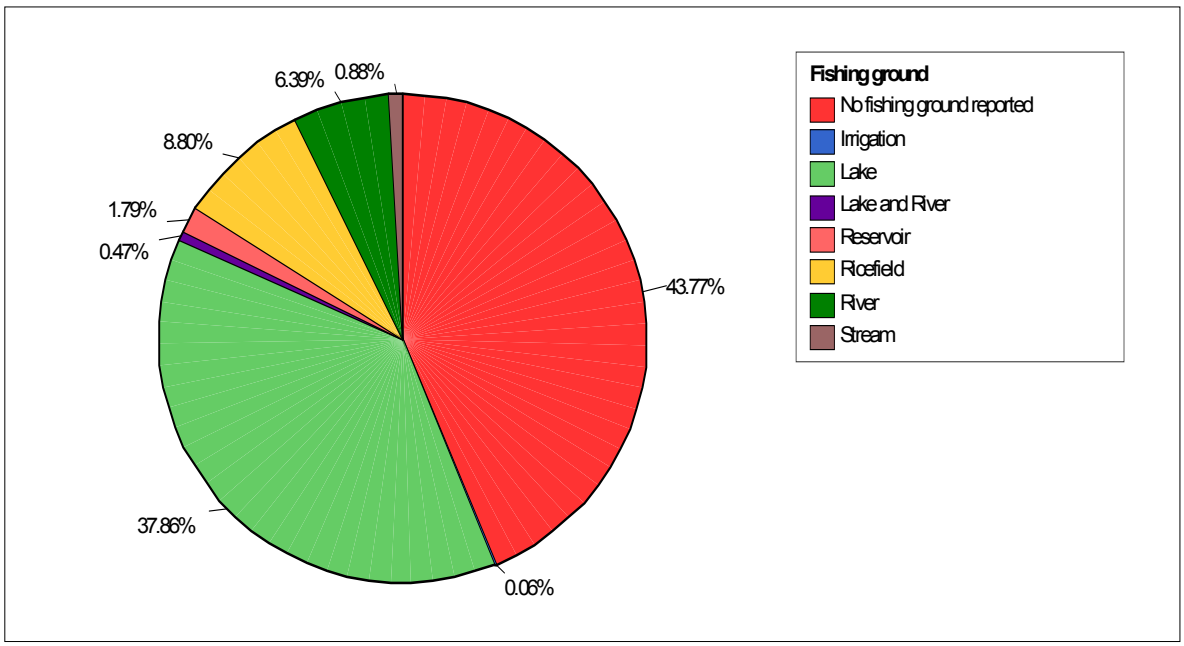
3.2 Fishing activities

Fishing activities were an important source of food and income for the villagers, especially for those villagers who had no farmland. All the families in the village were involved in fishing activities, which took place throughout the year in various fishing grounds. There was more family fishing in the closed season than in the open season because the families could access rivers, lakes, channels and other fishing grounds in the fishing lot. During the open season families are allowed to fish only in common access areas, which are insufficient as only one lake falls into this access category. In addition, some fishers migrated to fish at the Great Lake and other areas outside the fishing lot.

3.3 Fishing grounds

The fishing ground most frequently used by fishermen in Phlong was the lake, followed by rice-fields and then rivers. However, the reliability of the data on the distribution of fishing grounds used by fishers in Phlong is questionable, as one third of the questionnaire forms gave no indication of a location.

Figure 3.4: Percentage of fishing activity per habitat type



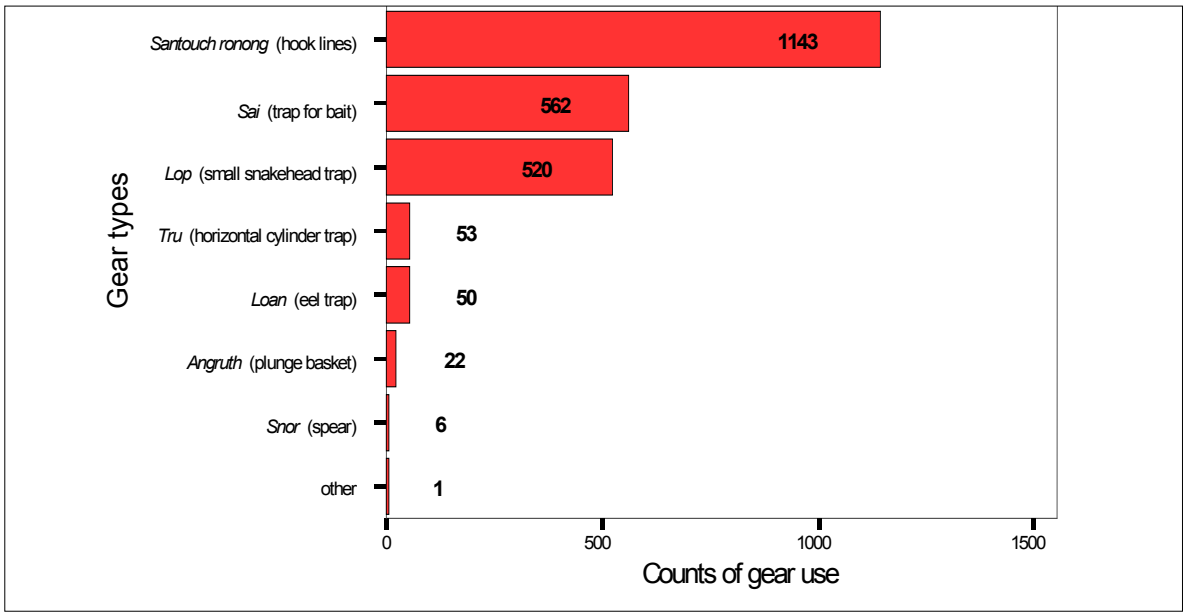
3.4 Gear Use

In the study area the fishers used different types of fishing gear, some of which are illegal, e.g. the widely used gill nets that are longer than the 10 m legally allowed for family fishing or bait traps with too small a mesh size.

The main gear types used were: *mong* (gill net), *santouch ronong* (hook lines), *sai* (trap for bait), *lop* (small horizontal trap for snakeheads), *tru* (horizontal cylinder trap), *loan* (eel trap), *angruth* (plunge basket trap), and *snor* (spear).

The graph below shows the total distribution of gear use records.

Figure 3.5: Distribution of fishing activity per gear type



3.5 Fish catch and composition of catch

The respondents caught a total of 60 fish species and five types of aquatic animals during the first nine months of the study period.

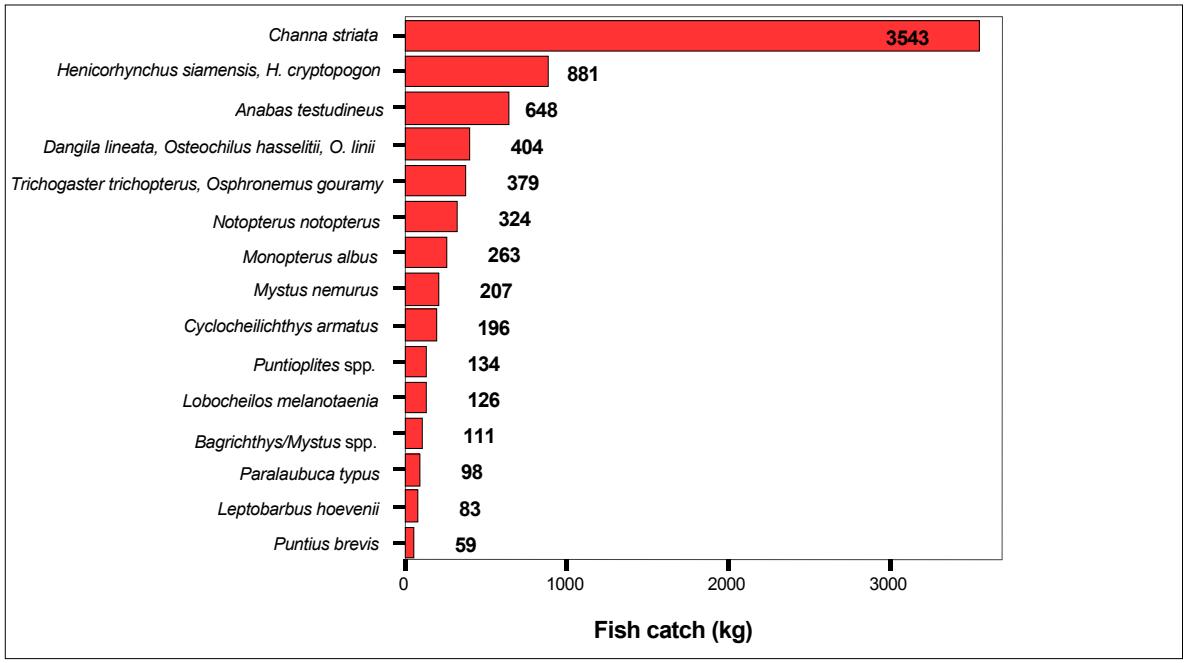
The total fish catch in the survey period was 8,034 kg, and the catch of aquatic animals was 62 kg. The 15 most important fish species caught made up 93% of the total fish catch by weight.

Snakefish (*Channa striata)* was by far the most frequently caught species, comprising 44% of the total fish catch;1,616 catches of Snakefish with a total weight of 3,543 kg were reported – an average weight of 2.2 kg per catch.

The second most frequently caught species was *Henicorhynchus* spp. There were records of 629 catches, with a total weight of 881 kg, making the average catch 1.4 kg.

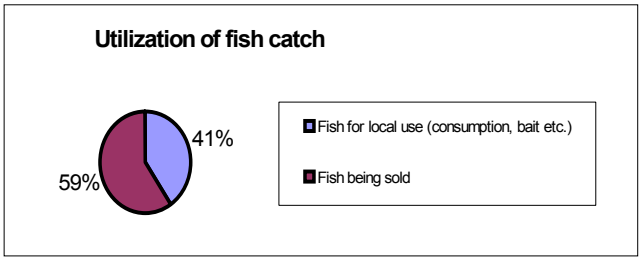
The respondents' total fish catch of 8,034 kg gave an average catch per household of 383 kg during the survey period. Based on this estimate, the annual average catch per household was 510 kg. This estimate is considerably lower than an estimate of family fishing catches made by Ouch and Dubeau (1999), who report 1,300 kg/year per household. This can be explained partly by the fact that the households in that study had easier access to fishing grounds. The relatively low fish catch reported in the present study may be related to the fact that Phlong is situated inside lot #14, and this caused many conflicts as the lot owner tried to restrict the villagers' access to fishing areas; even though the villagers were legally entitled to fish in these areas (as defined in the burden book of the fishing lot) they still faced problems with the lot owner.

Figure 3.6: Distribution of fish catch (kg) by species



A small proportion of the total catch was used for bait, consumption etc., and the remainder (59% in this case) was sold.

Figure 3.7: Percentage utilization of fish catch



From an economic point of view the most important species was again Snakefish, as this species comprised 60% of the total amount of fish sold.

It was difficult to calculate the value of the fish sold as the prices obtained were not recorded systematically and prices fluctuated during the year. An estimate was made on the basis of the data obtained through the questionnaires. The average price obtained per kilo used for this estimate was 2,100 Riel/kg. This is quite a high estimate but it is important to note that the main species sold, Snakefish, is one of the more expensive species. Furthermore the best quality fish are normally sold, and species of low value/quality are consumed in the household. This gave an estimated average monthly income of 53,000 Riel (US$ 13.5).

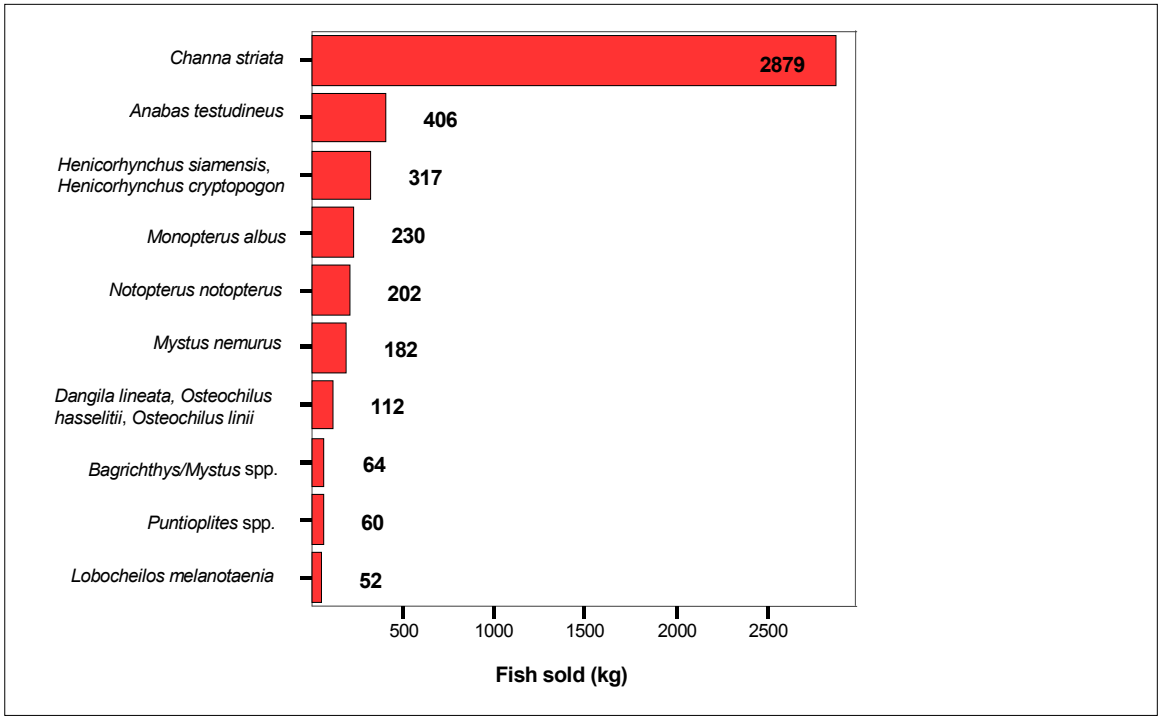
3.6 Farming activities

In Phlong village about 80% of the total population are farmers, the remainder being some 31 families who have no rice land. The important crops for the people living near the Tonle Sap River and inside the fishing lot, in villages like Phlong, are dry-season rice, lotus and *chomkar* (non-rice) crops such as corn, beans, tobacco, chillis, pumpkins, and cucumbers. Two varieties of dry-season rice (IR66 and IR42), were originally distributed by the government. Rice is transplanted in December and January (depending on the water level in the fields) and harvested in March, April and May. Yields are roughly 1.5-2 tons per hectare in a good year. The reason for the low yields is that the soil is not adequately prepared and there is insufficient water. Rats are also a major problem: the villagers complain that rats destroy half of their rice production every year. Some farmers produce less than 50 kg per

hectare because of damage by rats (Swift, 1999). Lotus and *chomkar* crops are planted in reservoirs, around the inlets of ponds, in front of or behind houses and along the banks of the river. Each family plants a combination of crops; they start planting in December or January and harvest in June or July (depending on crop type).

The total rice production of the respondents in the survey period was 6,440 kg, an average household rice production of 307 kg. Other farming activities generating a significant output were production of cucumbers, with a household average of 60 kg, and beans, with an average household production of 40 kg. Furthermore 950 kg of lotus were produced, however it would be misleading to report an average household production of 42 kg as only five households were involved in lotus production.

Figure 3.8: Distribution of fish sales by species



3.7 Gathering of CPRs

The CPR activities mentioned in this paper were related to food and consumption therefore firewood etc. are not included.

The most important CPRs were vegetables/plants (an average of 20 kg per household during the survey period), *san dan mchou* (*Garcinia loureiri* - average of 45 kg per household), rats (average 3.5 kg per household) and toads (average 2.6 kg per household).

4. SUMMARY OF PRODUCTION OF DIFFERENT ACTIVITIES

The findings about the profitability of fishing and farming in relation to the time spent on the activities are only preliminary. An attempt has been made to make a rough estimate of the income generated from the sale of fish, however this was difficult as the information on the prices paid to the fishermen is incomplete. As both the prices and the catch fluctuate during the year it will be necessary to obtain further information on the variance of prices in order to arrive at a more precise estimate. The same uncertainty influences the estimate of the output from farming activities.

It is clear that it is difficult to determine which activity is most important, as all activities are complementary. However in terms of monetary value fishing activities generate a higher return (800,000 Riel or US$ 205) than farming activities (226,000 Riel or US$ 58). Fishing is also less time

consuming than farming – 13.5 % of the daily time budget is spent on fisheries compared with 18% on farming.

Table 3.1: Comparison of production from different activities

	Product	Amount produced	Estimated value Riel*	Estimated value $	Time spent on activity %
Fishing activities	Fish (local use)	155 kg*	800,000 Riel	$ 205	13.5 %
	Fish for sale	228 kg			
Farming activities	Rice	307 kg	123,000 Riel	$ 58	18%
	Cucumber	60 kg	21,000 Riel		
	Beans	40 kg	32,000 Riel		
	Lotus	42 kg	50.000 Riel		
Gathering of CPRs	Vegetables	20 kg	No values estimated	No values estimated	5%
	San dan mchou	45 kg			
	Rats	3.5 kg			
	Toads	2.6 kg			

* The amount of fish consumed per household that originated from the household's own catch was 218 kg. The remainder of the fish consumed by households (61 kg/ 28%) was either bought or obtained as gifts.

* The values are based on estimates of prices per kg (rice 400 Riel, cucumber 350 Riel, beans 800 Riel, lotus 1,200 Riel).

In relation to the potential for reaching the villagers through extension services, it is clear from the study that most villagers spend very little time on official meetings (0.1%). It is not known, however, if this is because very few official meetings are called in Phlong village.

The season also has to be taken into account in planning extension activities, as the workload clearly peaks when both fishing and farming activities are pursued at the same time.

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